

CLAIMS

1. In a partitionable computer system including a plurality of machine resources having a plurality of machine resource identifiers, a method for creating a physical resource identifier space in a partition of the partitionable computer system, the method comprising steps of:

- (A) establishing a mapping between a plurality of physical resource identifiers and at least some of the plurality of machine resource identifiers, wherein the plurality of physical resource identifiers are numbered sequentially beginning with zero; and
- (B) providing, to a software program executing in the partition, an interface for accessing the at least some of the plurality of machine resources using the plurality of physical resource identifiers.

2. The method of claim 1, wherein the plurality of machine resources comprises a plurality of machine memory locations, wherein the plurality of machine resource identifiers comprises a plurality of machine memory addresses, wherein the machine resource identifier space comprises a machine memory address space, and wherein the plurality of physical resource identifiers comprises a plurality of physical memory addresses.

3. The method of claim 1, further comprising a step of performing the steps (A) and (B) for each of a plurality of partitions of the partitionable computer.

4. The method of claim 1, wherein the step (A) comprises a step of creating an address translation table that records the mapping between the plurality of physical resource identifiers and the at least some of the plurality of machine resource identifiers.

5. The method of claim 1, wherein the interface comprises means for translating a physical resource identifier selected from among the plurality of physical resource identifiers into one of the plurality of machine resource identifiers in accordance with the mapping.

6. The method of claim 1, wherein the interface comprises a Content Addressable Memory that establishes the mapping.

7. The method of claim 1, wherein the software program comprises an operating system.

8. In a partitionable computer system including a plurality of machine resources having a plurality of machine resource identifiers, an apparatus comprising:

mapping means for establishing a mapping between a plurality of physical resource identifiers and at least some of the plurality of machine resource identifiers, wherein the plurality of physical resource identifiers are numbered sequentially beginning with zero; and

interface means for accessing the at least some of the plurality of machine resources in response to requests from a software program executing in a partition of the partitionable computer system, wherein the requests identify the at least some of the plurality of machine resources using the plurality of physical resource identifiers.

9. The apparatus of claim 8, wherein the plurality of machine resources comprises a plurality of machine memory locations, wherein the plurality of machine resource identifiers comprises a plurality of machine memory addresses, wherein the machine resource identifier space comprises a machine memory address space, and wherein the plurality of physical resource identifiers comprises a plurality of physical memory addresses.

10. The apparatus of claim 8, wherein the mapping means comprises means for creating an address translation table that records the mapping between the plurality of physical resource identifiers and the at least some of the plurality of machine resource identifiers.

11. The apparatus of claim 8, wherein the interface means comprises means for translating a physical resource identifier selected from among the plurality of physical resource identifiers into one of the plurality of machine resource identifiers in accordance with the mapping.

12. The apparatus of claim 8, wherein the interface means comprises a Content Addressable Memory that establishes the mapping.

13. The apparatus of claim 8, wherein the software program comprises an operating system.

14. In a partitionable computer system including a plurality of machine resources having a plurality of machine resource identifiers, a method for accessing a select one of the plurality of machine resources specified by a physical resource identifier, the method comprising steps of:

- (A) identifying a mapping associated with a partition in the partitionable computer system, wherein the mapping maps a plurality of physical resource identifiers in a sequential zero-based physical resource identifier space of the partition in to at least some of the plurality of machine resource identifiers;
- (B) translating the physical resource identifier into a machine resource identifier using the mapping, wherein the machine resource identifier specifies the select one of the plurality of machine resources; and
- (C) causing the select one of the plurality of machine resources to be accessed using the machine resource identifier.

15. The method of claim 14, wherein the plurality of machine resources comprises a plurality of machine memory locations, wherein the plurality of machine resource identifiers comprises a plurality of machine memory addresses, wherein the machine resource identifier space comprises a machine memory address space, and wherein the plurality of physical resource identifiers comprises a plurality of physical memory addresses.

16. The method of claim 14, wherein the step (C) comprises a step of reading a datum from the machine memory address.

17. The method of claim 14, wherein the step (C) comprises a step of writing a datum to the machine memory address.

18. In a partitionable computer system including a plurality of machine resources having a plurality of machine resource identifiers, an apparatus for accessing a select one of the plurality of machine resources specified by a physical resource identifier, the apparatus comprising:

means for identifying a mapping associated with a partition in the partitionable server, wherein the mapping maps a plurality of physical resource identifiers in a sequential zero-based physical resource identifier space of the partition to at least some of the plurality of machine resource identifiers;

means for translating the physical resource identifier into a machine resource identifier using the mapping, wherein the machine resource identifier specifies the select one of the plurality of machine resources; and

means for causing the select one of the plurality of machine resources to be accessed using the machine resource identifier.

19. The apparatus of claim 18, wherein the plurality of machine resources comprises a plurality of machine memory locations, wherein the plurality of machine resource identifiers comprises a plurality of machine memory addresses, wherein the machine resource identifier space comprises a machine memory address space, and wherein the plurality of physical resource identifiers comprises a plurality of physical memory addresses.

20. The apparatus of claim 18, wherein the means for accessing comprises means for reading a datum from the machine memory address.

21. The apparatus of claim 18, wherein the means for accessing comprises a means for writing a datum to the machine memory address.

22. The apparatus of claim 18, wherein the means for translating comprises a Content Addressable Memory.

23. In a partitionable computer system including a plurality of machine memory locations having a plurality of machine memory addresses, the partitionable computer system further including a plurality of physical memory locations having a plurality of physical memory addresses that are mapped to at least some of the plurality of machine memory addresses, the partitionable computer system further including a plurality of partitions executing a plurality of software programs, a method comprising steps of:

- (A) selecting a first subset of the plurality of physical memory locations, the first subset of the plurality of memory locations being mapped to a first subset of the plurality of machine memory addresses; and
- (B) remapping the first subset of the plurality of memory locations to a second subset of the plurality of machine memory addresses without rebooting the partitionable computer system.

24. The method of claim 23, further comprising a step of:

- (C) prior to the step (B), copying the contents of the first subset of the plurality of machine memory addresses to the second subset of the plurality of machine memory addresses.

25. In a partitionable computer system including a plurality of machine memory locations having a plurality of machine memory addresses, the partitionable computer system further including a plurality of physical memory locations having a plurality of physical memory addresses that are mapped to at least some of the plurality of machine memory addresses, the partitionable computer system further including a plurality of partitions executing a plurality of software programs, an apparatus comprising:

means for selecting a first subset of the plurality of physical memory locations, the first subset of the plurality of memory locations being mapped to a first subset of the plurality of machine memory addresses; and

means for remapping the first subset of the plurality of memory locations to a second subset of the plurality of machine memory addresses without rebooting the partitionable computer system.

26. The apparatus of claim 25, further comprising:

means for copying the contents of the first subset of the plurality of machine memory addresses to the second subset of the plurality of machine memory addresses.